



MEMORANDUM

To: Members of the Finance Committee

From: Rich Olson, City Manager

Date: September 8, 2015

Re: Consideration – Nexgrid System Broadband Project Proposal

BACKGROUND:

One of the major projects included in the FY 2015-2016 budget was the full implementation of the Nexgrid System. Once fully implemented, the system would create a Wi-Fi system throughout the City. The system will, in its present configuration, be designed for 100 megabytes, but can be expanded to 1 gigabyte of available space.

The Nexgrid System will only need about 5 megabytes to operate. This allows the system to be operated for other possible uses. The primary use would be to lease out the surplus space to a third party that could then market the surplus capacity to offer cost-effective internet services. Other options would be cable TV and phone.

City staff has met with Professor Nicholas Didow of UNC Chapel Hill. Professor Didow was one of the original champions of the middle mile and sought to insure its installation around the state. In addition, Professor Didow has extensive knowledge of the Smart Grid System and wrote several papers on the subject 20 years ago.

Staff has asked Professor Didow to look at three areas to leverage Smart Grid deployment: what are the best practices for Smart Grid deployment; what are the options; and what are the strategies for broadband.

The City's total investment in the Nexgrid System will be \$3,000,000 and it would be beneficial to the City to offload some of those expenses to a third party. Once Professor Didow's work has been completed, the study document could be used as a foundation to entice third parties to consider operating or leasing space on the system.

ANALYSIS:

The City of Elizabeth City's Smart Grid and Broadband Project will look at the feasibility of allowing a third party to utilize the Nexgrid System that the City will be installing. The study will identify potential uses for the surplus capacity; and in addition, it could be used as a tool to market the surplus capacity. The cost of the study is \$20,000. This charge covers the cost of the project leadership team, travel expenses, printing costs and all other project expenses. Once the study is completed, specific deliverables include two major meetings to be held in Elizabeth City, PowerPoint decks with findings, analysis and recommendations pertaining to each of the key questions; and Executive Summary reports. The deliverables also include a half-day workshop in Elizabeth City for the final presentation, findings, analysis and recommendations.

Funding for the Nexgrid system is primarily coming from the Electric Fund budget. Staff is proposing that all costs associated with the study be charged to the Electric Fund budget.

STAFF RECOMMENDATION:

By motion, recommend that the City Council authorize the City of Elizabeth City Smart Grid and Broadband Project study as detailed in the attached proposal.

RCO/vdw

Proposal

City of Elizabeth City Smart Grid and Broadband Project

September 2, 2015



CITY OF

ELIZABETH CITY
HARBOR OF HOSPITALITY *North Carolina*

Prepared for

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Situation

The City of Elizabeth City has successfully launched a pilot Advanced Meter Infrastructure Fixed Area Network smart grid system with 300 residential and commercial end point devices – 100 electric meters, 100 water meters, and 100 load control devices— all located in the downtown area. The smart grid system is designed by Nexgrid, which has a strategic partnership with ElectriCities and is the vendor of choice for most NCEMPA member cities. The Nexgrid AMI FAN system includes the deployment of a WiFi network as infrastructure for its operation. The available capacity of the deployed WiFi network far exceeds the transmission capacity required to support the smart grid system needs. The initial smart grid pilot program results are very promising and the City of Elizabeth City anticipates deploying the system – including WiFi network -- to serve all 11,000 +/- residential and commercial customers. This will result in significant available WiFi network capacity throughout the City of Elizabeth City.

The City of Elizabeth City is currently served by middle mile fiber optic cable from the Golden LEAF Rural Broadband Initiative, which runs throughout the downtown and also serves several other anchor institutions including ECSU, College of the Albemarle, and Albemarle Sentara Regional Medical Center.

Private broadband providers – primarily a legacy cable company and legacy phone company – have been uneven in serving the local market and hesitant to invest in expanding and upgrading their service capabilities throughout the community. In the historic downtown alone, there is evidence of an unserved market for enterprise customers that require access to affordable, reliable, high capacity broadband.

Although North Carolina municipalities are currently prohibited by state law from being a broadband service provider and charging end users for Internet access, municipalities may none the less give away access and they may also act as a wholesaler to third party providers. Therefore, a secondary outcome of deploying WiFi in order to accomplish smart grid throughout the City of Elizabeth City is to leverage the resulting available surplus wireless network capacity to upgrade and/or increase broadband in the local market, with more affordable, more reliable, faster, and higher capacity Internet broadband content and services.

This document is a project proposal prepared at the request of City Manager Rich Olson. The project will examine several issues pertaining to the feasibility for the City of Elizabeth City to leverage surplus WiFi network capacity to increase local broadband services and competition in the local market and identify options and strategies to enable the City of Elizabeth City to accomplish this important objective.

Key Questions and Project Scope

The scope of this project is determined by the following three key questions that will be addressed:

1. **LEVERAGE SMART GRID DEPLOYMENT?** --- Can the smart grid WiFi infrastructure deployment be designed and/or modified in a manner that will enhance the ability of the City of Elizabeth City to recruit additional broadband service providers or to enable those providers already here to offer high capacity, reliable service at a reasonable cost throughout the community using this network infrastructure?

2. **BEST PRACTICE EXAMPLES?** -- What are some Best Practice Examples from other similar communities that have leveraged WiFi network infrastructure for both smart grid and broadband service enhancement, how have they done this, and what do their experiences suggest that the City of Elizabeth City should do and avoid doing?

3. **OPTIONS AND STRATEGIES FOR BROADBAND?** – What business case for additional, upgraded, and enhanced broadband services can the City of Elizabeth City make with unserved or underserved broadband needs across the community, and what are the options and strategies available to the City of Elizabeth City to recruit new broadband service providers and/or upgrade private service companies currently in the local market? To what extent is there already unserved or underserved broadband need among enterprise customers, community anchor institutions, commercial customers, residential customers, and others? How do the current broadband service offerings and prices available in the City of Elizabeth City compare to those in other comparable cities today, and how do they compare to forecasts of expected broadband service offerings needed in the future? What are at least three potential new broadband service providers that might be recruited to enter the City of Elizabeth City market using the new available WiFi network capacity?

Deliverables

The project deliverables include two major meetings to be held in Elizabeth City; PowerPoint decks with findings, analysis, and recommendations pertaining to each of the key questions; and Executive Summary reports. The deliverables also include a half-day workshop in Elizabeth City for the final presentation, findings, analysis, and recommendations.

Project Timeline and Key Steps

This project will be concluded over approximately three months with the following major project timeline and key steps:

- September 2, 2015 – Formal proposal to City Manager Rich Olson
- September 4, 2015 – Contract or MOU executed, project begins
- Week of October 26, 2015 – Preliminary findings meeting
- Week of December 7, 2015 – Final presentation and half-day workshop, PowerPoint decks, and Executive Summary reports provided

Professor Didow would be in weekly contact by telephone or in person with the individual designated as his primary point of contact with the City of Elizabeth City. These weekly “check in” meetings would be opportunities to report on progress for the project and major findings and recommendations.

For the findings and recommendations from the project to be most helpful and actionable for the City of Elizabeth City, the project must be accomplished with good communication and close contact between Professor Didow and the designated City of Elizabeth City point of contact throughout these three months.

Project Leader

The leader for this project will be Professor Nicholas Didow. Professor Didow is a professor in the Marketing Department at UNC's Kenan-Flagler Business School. He has published over 30 peer-reviewed scholarly articles in academic journals including the *Journal of Marketing Research*, *Journal of Marketing*, and the *Journal of Consumer Research*. His classes and his workshops include marketing strategy, market research methods, and consumer behavior analysis. Over his career, Professor Didow has conducted and advised hundreds of consumer and marketing studies for corporations, non-profit organizations, and government agencies. Professor Didow is also a former public elected official, having successfully run for and served three terms on the Chapel Hill-Carrboro City Schools Board of Education from 1995-2005.

Professor Didow has considerable experience with sustainable economic development across North Carolina. He is co-author of the pioneering demand-side management book, *Electric Utility Load Management* published in 1985; has conducted numerous business plans and feasibility studies for businesses, nonprofits, and government agencies, particularly in rural North Carolina; and partnered with several other organizations and community leaders in northeastern North Carolina to design and accomplish the \$145,000,000 Golden LEAF Rural Broadband Initiative which deployed 1,802 miles of fiber optic middle mile cable across 67 unserved and underserved North Carolina counties from 2010-2013. Professor Didow has helped design and plan middle mile and last mile broadband infrastructure projects and services in rural North Carolina, West Virginia, and Vermont. More recently, he represented UNC's Kenan Institute of Private Enterprise and Kenan-Flagler Business School in leading a major partnership with the North Carolina Department of Commerce and the Office of the Governor to develop a new statewide brand for North Carolina.

Budget

The comprehensive budget for the project would be \$20,000. The budget provides for Professor Didow's project leadership and management, other project staff involvement as appropriate, and access to any other needed student or staff support. The \$20,000 includes all travel expenses, printing costs, and all other project expenses.

Next Steps

I welcome the opportunity to discuss this important project with the leadership of the City of Elizabeth City and am prepared to begin work as soon as the project is commissioned by a signed copy of this proposal, brief MOU, or simple contract for professional services as would be required by the City of Elizabeth City.

The City of Elizabeth City would be expected to designate a primary point of contact for this project, which might be the City Manager, Angela Cole, or Wayne Harris. I would be in weekly contact with this individual throughout the project with a designated weekly time to check in and report on progress.

Please contact me if you have any additional questions or comments.

Sincerely,

A handwritten signature in black ink, appearing to read "Nicholas Didow". The signature is written in a cursive style with some overlapping letters.

Professor Nicholas Didow
Kenan-Flagler Business School